



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,426	12/06/2005	Thomas Johannes Mueller	056226.56029US	4261
23911 7590 02/01/2008 CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			EXAMINER LEE, BENNY T	
			ART UNIT 2817	PAPER NUMBER
			MAIL DATE 02/01/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,426	Applicant(s) MUELLER ET AL.	
	Examiner Benny Lee	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4 and 6-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,10-14; 6-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2817

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 December 2007 has been entered.

The disclosure is objected to because of the following informalities in the substitute specification filed 18 March 2005: Note that the following reference labels need a corresponding description relative to the specification's description of that drawing figure: Fig. 5 "TM", since the description at page 8, line 24 only refers to "Figure 4" rather than "figure 5" as asserted by applicants'. It is suggested that perhaps --(Figs. 4 and 5)-- should be inserted after "TM" at page 8, line 24, as a way of obviating this objection. Appropriate correction is required.

Claims 9; 11, 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 9, note that "the upper face of the substrate" lacks strict antecedent basis in claim 6, from which this claims directly depend. It should be noted that claim 1 recites an "an upper face".

In claims 11, 13, note that these claims improperly depend from canceled claim "3".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 10-14; 6-9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takahashi (of record).

Takahashi (Figs. 6A, 6B) discloses a waveguide filter comprising: a glass substrate (301) having an upper face thereof coated by a coplanar conductive pattern, which includes a microstrip filter pattern (309), a coplanar ground pattern (i.e. characterizing “a structured metallic layer”) substantially surrounding the microstrip filter pattern (309) and at least one metallic coplanar waveguide strip line portion (i.e. 308) electro-magnetically coupled to the microstrip filter pattern as to provide input/output coupling to the microstrip filter pattern. A “component” (i.e. characterized by silicon substrate 302) includes a cavity (i.e. 303) patterned in the silicon substrate (302) as to define “side walls” [including one sidewall opposite the upper face of substrate (301)] in the silicon substrate (302). A metal ground layer (i.e. 304) is coated on the sidewall surfaces of the silicon substrate (302), including the sidewall opposite the upper surface of substrate (301). Note that the “component” is surface mounted with respect to the glass substrate (301) such as to form a hollow air cavity (i.e. 305) over the microstrip filter pattern (309) and a portion of the coplanar waveguide strip lines (308). In particular, note that the ground plane layer (304) is in electrical contact (i.e. via micro bumps 306) with the surrounding ground plane on glass substrate (301) such that the ground plane on substrate (301) in conjunction with the ground plane layer (304) on the sidewalls of component substrate (302) define the walls of a hollow cavity substantially enclosing the microstrip filter and the coplanar waveguide input/output strip line pattern. Also, note that the hollow cavity (303) of the component further includes a thin circumferential periphery or “web” which provides the portion of ground plane layer (304) in electrical contact with the surrounding ground plane (308) of the

Art Unit: 2817

substrate (301). It should be noted that the thin “periphery” of the “web” is a closed structure such that the periphery “follows the structure” (i.e. follows the closed periphery of the cavity within the component 302), as far as such a limitation can be understood. It should be further noted that as known to those of ordinary skill in the art, the resultant enclosed air cavity functions as a cavity structure with specific cross-sectional dimensions resulting in the hollow cavity being resonant at a particular frequency, thereby necessarily affecting the frequency characteristic of the overall filter

Applicant's arguments filed 27 December 2007 have been fully considered but they are not persuasive.

With respect to the prior art rejection, applicants' have asserted that amended claim 1 distinguishes over Takahashi et al contains no mention that the “silicon substrate” is a “circumferential web” which “rests on the structured metallic layer”. Moreover, applicants' contend that Takahashi et al relies on “a plurality of Au microbumps 306 formed on the flat face around cavity 303” upon which the “circumferential web” (as defined by the examiner) rests on to establish the electrical connection there between. Therefore, applicants' conclude that because such a “circumferential web” must “rest” on the “microbumps”, it does not rest on the “upper face” of the substrate. It has been further asserted by applicants' that by providing the “web” structure, an optimal joining arrangement would have been provided, since the joining would prevent solder flow into the interior of the cavity when joining takes place, as contrasted with “gaps” between the substrate and component, when the microbump connections are used in Takahashi et al, which would allow such solder flow into the interior.

In response, the examiner has considered applicants' arguments, but have found them unpersuasive for the following reasons: First, with respect to applicants' assertion that the silicon substrate (302) in Takahashi et al lacks a "circumferential web" which "rests on the structured metallic layer", such an assertion is clearly not true. As pointed out in the above rejection of record, the examiner has clearly indicated that the "component" (i.e. silicon substrate 302) includes "a thin circumferential periphery", which the examiner has corresponded to the claimed "circumferential web" (i.e. a thin layer of material is nominally characterized as a "web"), and which provides "the portion of the ground plane (304) in electrical contact with the surrounding ground plane of the substrate (301)". That is to say, the thin peripheral portion of the silicon substrate does indeed define a "circumferential web" of "component" (i.e. substrate 302), even though the use of such terminology is not explicitly used in Takahashi et al. Secondly, as for applicants' assertion that the "circumferential web" in Takahashi et al "rests on" the conductive microbumps rather than resting on the metallic ground plane layer, as claimed, such an argument remains unpersuasive. While such may be the case, it should be noted that the "circumferential web" (as defined in the above rejection) would ultimately "rest on" and thus be in electrical contact with the metallic layer. As described at column 5, lines 48, 49, the silicon substrate (302) is "mounted" on the glass substrate (which includes the metallic ground plane) through the "microbumps". It should be further noted that at least independent claim 1 merely calls for the "circumferential web" to "rest on" the "structured metallic layer", which is clearly shown in the examiners interpretation of Takahashi et al. Furthermore, in Takahashi et al, since the component provides electrical contact around it's periphery (i.e. via ground plane layer 304), when it is in contact with the ground plane layer of substrate (301), then such a configuration has been

Art Unit: 2817

interpreted by the examiner as a feature which “follows the structure” (i.e. as far as such a limitation can be understood). Additionally, it should be noted that in view of what is actually recited in claim 1, whether microbumps are present (or not) in Takahashi et al does not appear germane to the rejection made, especially since it has been established by the examiner that the component has a “circumferential web” which “rests on” the “structured metallic layer” through the microbumps and which “follows the structure”, as set forth in the above rejection. Thirdly, with respect to purported advantages of applicants’ invention with regard to the joining between the component and the structured metallic layer by preventing solder from flowing into the interior of the cavity, as contrasted to the disadvantage of joining having “gaps” as in Takahashi et al (i.e. due to the presence of microbumps) thereby allowing the solder to flow through such “gaps” into the interior of the cavity, such an argument is not commensurate with what is actually claimed (e.g. in claim 1). That is to say, the purported advantage does not appear to be actually recited or readily inferred from claim 1 as currently presented, and as such any arguments relative to such purported advantage is not commensurate with or germane to what is actually recited in claim 1. Accordingly, for reasons set forth above, the rejection of record has been sustained.

Claims 1, 2, 4, 10-14; 6-9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Bertsch et al.

Bertsch et al discloses a waveguide filter structure comprising: a substrate plate (i.e. 1) having an electrical conductive surface disposed thereon (e.g. see column 3, lines 58, 59) as well as conductive striplines (e.g. coupling terminals 4, 5) disposed thereon for the coupling of electromagnetic energy. A component (i.e. hood 6) is fitted on the surface of the substrate plate

Art Unit: 2817

(1) and is electrically connected to the metallic layer of the substrate plate (1) at a periphery of the hood (6), as described at column 3, lines 61, 62. Note that the resultant electrical connection of the hood (6) and the metallic surface of the substrate plate (1) provides a cavity resonator (11) having a hollow chamber therein (e.g. see column 3, lines 63, 64) of a particular shape and size to provide a desired frequency filtering characteristic. Moreover, such a hollow cavity inherently defines conductive sidewalls on both the surfaces of the hood (6), as well as on the conductive layer on the substrate plate (1). It should be noted that the hood (6) has thin peripheral walls, which as known to those of ordinary skill in the art, characterizes a peripheral "web", which as depicted in Fig. 1, "rests on" the conductive layer of substrate plate (1), as described at column 3, lines 56-58.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

B. Lee



BENNY T. LEE
PRIMARY EXAMINER
ART UNIT 2817